

## HCFA Year 2000 Compliance Definition

### **Basic Definition:**

Year 2000 compliant means information technology that accurately processes date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the nineteenth, twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations. Furthermore, Year 2000 compliant information technology, when used in combination with other information technology, shall accurately process date/time data if the other information technology properly exchanges date/time data with it. [*adapted from: FAR 39.002 Definitions*]

### **Scope of Definition:**

All HCFA internal systems, external systems, and interfaces need to be Year 2000 compliant. This includes the following business components:

- Applications – including cross-business applications, all external interfaces
- Databases
- Computer Infrastructure – including hardware, system software, telecommunications, and date - dependent functions such as passwords, accounts, and software licenses.
- Non-IT Systems – including physical plant security, card entry systems, elevator systems, environmental control systems
- Other – Manual processes, end-user computing and forms, 3<sup>rd</sup> party tools, COTS products

### **Year 2000 Compliance High Level Requirements:**

- *General Integrity:* No value of current date will cause interruptions in normal operations
- *Date Integrity:* All manipulations of calendar-related data (dates, durations, days of week, birthdates, etc) will produce desired results for all valid date values within the application domain
- *Explicit century:* Date elements in interfaces and data storage permit specifying century to eliminate date ambiguity
- *Implicit century:* For any date element represented without century, the correct century is unambiguous for all manipulations involving that element.
- *Interface Integrity:* Year 2000 compliant systems, when used in combination with other Year 2000 compliant systems, shall accurately process date/time data exchanged between the two systems.

### **Specific Year 2000 Compliance Requirements:**

- *General Integrity*
  - Access to archived data is not impaired by any century issues.
  - System correctly transitions from 31 December 1999 to 1 January 2000 and from last business-computing day of 1999 to the first business-computing day of 2000.
  - The Year 2000 is correctly treated as a leap year by the operating system and all applications (e.g. recognizes 2/29/00 as the leap year, and that 2000 has 366 days).
  - Internal QA routines are not impaired by and directly support century issues
  - The use of pseudo dates (such as 9999/99/99, 9999/12/31, and 99/09/09) within date fields does not impair correct functional processing.
  - When using windowing, ensure that the same window is used throughout the system.

- *Date Integrity:*
  - All manipulations of time-related data will produce correct results for all valid date values
  - All invalid input date values will trigger appropriate error processing
  - Date-related processing logic, i.e., calculations, comparisons, sorts, and date validations will operate correctly when dealing with dates either at the century boundary or after the turn of the century.
  - Processing and/or system functionality related to high-risk dates (e.g. pivot year, special business cycle processing dates such as first Monday, first Friday, first end of month, first end of quarter, archive dates) will produce correct results.
- *Explicit century:*
  - Automated components use 4-digit years or contain the necessary interpretation logic to determine the correct year.
  - Manual components, interfaces, and processes use dates that are unambiguous. This can be achieved either through the title of the date (Today's Date:) or through the format of the date (e.g. CCYYMMDD)
  - Development of new applications, both in-process and planned, should adopt a standard of a 4-digit year field.
  - If data is expanded, date format shall be CCYYMMDD(reference FIPS 4-1) or CCYYDDD (Julian) for internal representation (e.g. computations, data storage) and MMDDCCYY for user interface
  - All external correspondences shall use a 4 - digit year
- *Implicit century:*
  - Internal application usage of dates and date fields must be clear and unambiguous in the context of the systems which use them
  - Date displays on screens and reports are in a consistent format that can be interpreted without ambiguity.
  - Program logic will interpret the correct century based upon the entered year
- *Interface Integrity:*
  - The application will correctly interface with all date data that is imported or exported.
  - Dates exchanged between systems over any interface shall use a 4 - digit year representation
  - All contractors, systems, and interfaces to HCFA (both internal and external) should be able to process data containing two and four position year data formats with no interruptions to, or failures in processing. These entities should bridge data coming in, and produce data containing the standard data format (CCYYMMDD or CCYYDDD) as output.

**HCFA Year 2000 Compliance Standards:**

1. External Data Exchange Year representation: 4 digits
2. Conversion method: Expansion is the primary method. When resource-limited, use a combination of windowing and expansion. When using windowing, ensure that the same window is used throughout the system.
3. Compliance exceptions are managed per the following procedure: to request an exception, submit a letter to Director, Systems Quality Group, OIS, HCFA, 7500 Security Blvd, N3 - 13 - 18, Baltimore, MD, 21244. Questions may be directly to the Systems Quality Group by phone on 410 - 786 - 1952.

**Things to Consider: Variations Based on Technology and Domain-Specific Peculiarities**

1. Data exchange standards (external and internal)
2. Impacts based on use of System date vs. Current date
3. Power-down continuity
4. Archiving scheduling and purging
5. Industry standards
6. Contract requirements
7. Design and coding standards
8. Overflow of base and offset representations
9. Impact of potential increase in database size
10. Impact of potential performance degradation
11. Impact to resource requirements due to increase in manual processing.

## HCFA Year 2000 Compliance Definition - Glossary of Terms

Term	Definition in Year 2000 Context
Automated components	Processing or functionality which is completed entirely by computerized methods
COTS (Commercial-Off-The-Shelf)	Applications of systems available for purchase on the commercial market.
Date Data Manipulations	Operations involving arithmetic calculations; branching based on data comparison; data format referencing and conversions; data storage, retrieval, sorting, merging, searching, indexing, or moving.
End - User Computing	Systems or applications commissioned or acquired by end - user departments without knowledge, input, or approval of IT. This would include desktop computing and HCFA non - standard system computing
Expansion	A Year 2000 conversion technique based on the increase in physical or logical size of a data element and the corresponding physical data that is referenced by that element
First business-computing day	The first business cycle which overlaps the century rollover.
Manual components	Processing or functionality which is wholly or partially accomplished by human decisions or by hand
Non - IT Systems	Systems that are not under IT control and that are either used internally or sold to/used by third parties
System	A collection of components organized to accomplish a specific function or set of functions.
Third - party tools	Tools which have been developed and are maintained by an organization other than HCFA or HCFA developers/maintainers
Windowing	A Year 2000 conversion technique that uses a 100 - year interval and a designated base year (known as the "pivot") to represent dates. The century of a 2 - digit year is determined by comparing the 2 digit-year against the pivot year . Any year that is greater than or equal to the pivot are considered to be within the current century. Date years that are less than the pivot are considered to be within the next century.